

# APCD 101

Air Pollution Control District  
07/16/2018



# Air Pollution Control in Louisville

Concerned about the growing problem of air pollution, city leaders in 1945 formed the Louisville Smoke Commission. That evolved into the Louisville Metro Air Pollution Control District, which today is responsible for enforcing national, state, and local air pollution laws and regulations – including the federal Clean Air Act – in Louisville/Jefferson County.



Daytime air pollution over downtown Louisville in 1943

# Who We Are

- To whom do we report?
  - The Community
  - Environmental Protection Agency
  - Ky. Division for Air Quality
  - Air Pollution Control Board
- How are we funded?
  - Federal Grants
  - Permit Fees
  - Emission Fees
  - Program Fees
  - Louisville Metro General Fund

## APCD Goals

Ensure healthy air for  
breathing

Help local businesses meet  
air quality standards

# U.S. Environmental Protection Agency

- Agency formed to “protect human health and the environment”
- Administers the Clean Air Act (CAA)
- “Cooperative federalism”



# KY Division for Air Quality



Energy &  
Environment  
Cabinet

The Air Pollution Control District "shall adopt no regulation or standard ***less stringent*** than a regulation or standard adopted by the cabinet ..."



# The Louisville Metro Air Pollution Control District

State and local air pollution agencies take the lead in carrying out the Clean Air Act.

- APCD is delegated authority to implement CAA in Louisville
- APCD provides solutions for Louisville Metro pollution problems that require special understanding of local industries, geography, housing, and travel patterns, as well as other factors.



**AIR POLLUTION  
CONTROL DISTRICT**

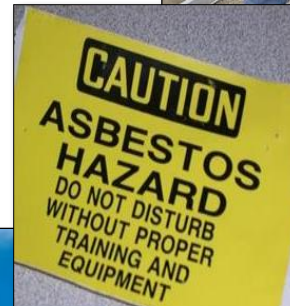
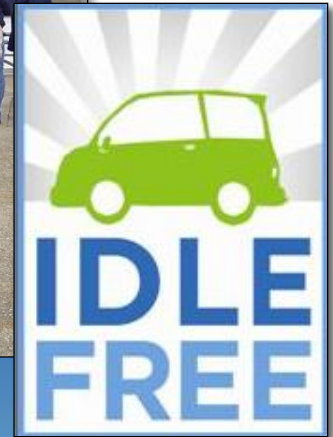
# Air Pollution Control District Board

- Regulatory authority for air pollution control in Louisville Metro/Jefferson County
- Private citizens appointed by the Mayor and approved by the Metro Council
- Adopts regulations, orders, and resolutions as needed to control air pollution

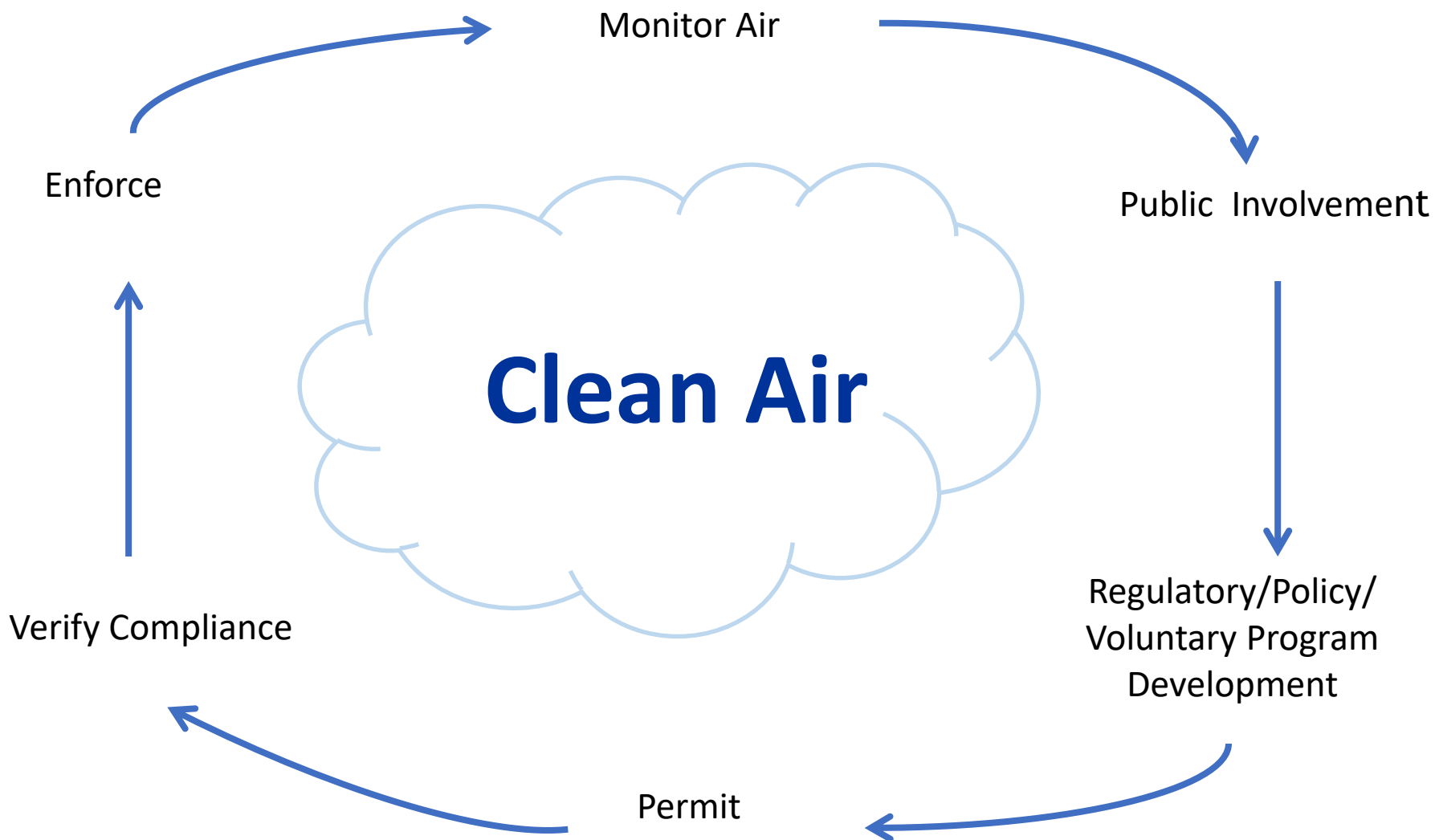


# What We Do

- Collect information
- Administer rules
- Issue and enforce permits
- Educate and assist
- Policy development







# APCD's Air Monitoring Network



- Network of equipment monitoring Louisville's air quality
- Monitors six "criteria" pollutants, air toxics and meteorology



# Regulations

- Air pollution in Louisville is controlled by both laws and regulations



- Laws
  - The acts, statutes, and ordinances passed by elected officials to govern an issue
  - Example: the Clean Air Act (CAA) is a federal law
- Regulations
  - Created by an agency to implement laws
  - Generally more specific than laws



APCD's Regulations may be found at  
[www.louisvilleky.gov/government/air-pollution-control-district/air-pollution-regulations-and-laws](http://www.louisvilleky.gov/government/air-pollution-control-district/air-pollution-regulations-and-laws)

# What is a State Implementation Plan or “SIP”?

- Complex, living, evolving collection of documents that is federally enforceable and serves as a long-term strategy or plan for attaining and maintaining the NAAQS.
- Describes how a state or local area will attain and maintain the NAAQS and may include:
  - Regulations
  - Source specific requirements (RACT/RACM)
  - Mobile Vehicle Emissions Budget (MVEB)
  - Maintenance plan(s)
  - Board Orders
  - Contingency measures





Kentucky's SIP (including the Jefferson County portion) can be found at [40 CFR Part 52 Subpart S](#)

# Permitting

- Title V
- FEDOOP (Federally Enforceable District Origin Operating Permit Program)
- Minor/Registered Sources
- STAR/Air Toxics



 Louisville Metro Air Pollution Control District  
701 West Ormsby Avenue, Suite 303  
Louisville, Kentucky 40203-3137 

**Title V Operating Permit**

Permit No.: O-0026-17-V Plant ID: 0026

Effective Date: 12/13/2017 Expiration Date: 12/31/2022

Permission is hereby given by the Louisville Metro Air Pollution Control District to operate the process(es) and equipment described herein which are located at:

Owner: Brown-Forman Corporation  
Source: Brown-Forman Cooperage  
402 MacLean Ave  
Louisville, KY 40209

The applicable procedures of District Regulation 2.16 regarding review by the U.S. EPA and public participation have been followed in the issuance of this permit. Based on review of the application on file with the District, permission is given to operate under the conditions stipulated herein. If a renewal permit is not issued prior to the expiration date, the owner or operator may continue to operate in accordance with the terms and conditions of this permit beyond the expiration date, provided that a complete renewal application is submitted to the District no earlier than eighteen (18) months and no later than six (6) months prior to the expiration date.


Application No.: See Table Application Received: See Table

Permit Writer: Shannon Hosey

Administratively Complete: 01/09/2017

Date of Public Notice: 10/26/2017

Date of Proposed Permit: 10/26/2017

  
Air Pollution Control Officer  
December 13, 2017

# Compliance

- Allows the APCD to evaluate processes and activities that create air pollution
- Helps companies and individuals understand their responsibilities to comply with APCD and federal [regulations and laws](#).
- Compliance activities include (but are not limited to):
  - Inspecting facilities
  - Reviewing records (i.e. reviewing emissions logs)
  - Issuing Notice of Violations (NOVs)
  - Providing resources to assist with compliance
  - Conducting Asbestos inspections
  - Developing Risk Management Plans (RMP)



# Enforcement

- Allows APCD to take steps to bring alleged violators into compliance through enforcement
- If necessary to ensure that businesses and the public comply with APCD's regulations, the agency issues a Notice of Violation and resolves it by:
  - Settling the violation through Board Orders and Enforceable Agreements
    - Penalties, Compliance Plans, Supplemental Environmental Projects
  - Administrative Hearing
  - Prosecuting violations of APCD's regulations

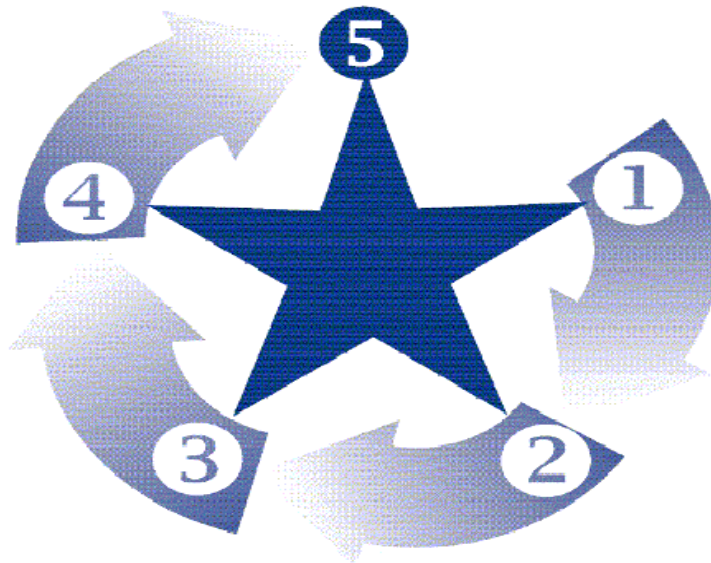


# Environmental Justice and Policy



## STAR Program

Strategic Toxic Air Reduction



- 1 Emissions levels
- 2 Release points
- 3 Modeling
- 4 Reduction plan
- 5 Compliance





# Community Complaints

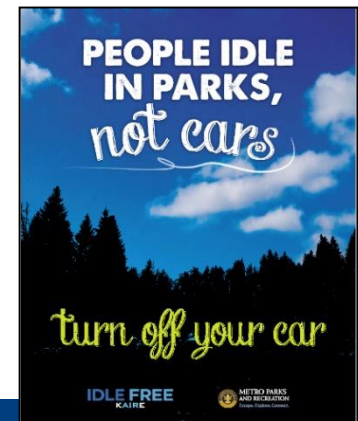
- Types of complaints received:
  - Odors
  - Dust
    - Dust plans in effect for businesses and facilities with APCD permits
    - Dust plans created in response to complaints
  - Smoke
    - Open Burning
    - Fire Pit regulations



Call APCD at  
(502) 574-6000 or  
Metro311

# Public Outreach

- Promote air quality awareness and education
  - Kentuckiana Air Education (KAIRE)
- Promote emission reduction programs
  - Idle Free Louisville
  - Grow More Mow Less
  - Lawn Care for Cleaner Air
- Apply for grant funding
- Facilitate stakeholder involvement
- Participate in community initiatives



# Community Engagement

- Partnership and Participation with Community Organizations:

- Partnership for a Green City
- West Jefferson County Community Task Force (WJCCTF)
- Rubbertown Community Advisory Council (RCAC)
- U of L Superfund Center/Green Heart
- Louisville Sustainability Council (LSC)
- Evolve KY
- Trees Louisville
- Louisville Grows
- Kentucky Clean Fuels Coalition (KCFC)



# Community Engagement (cont'd)

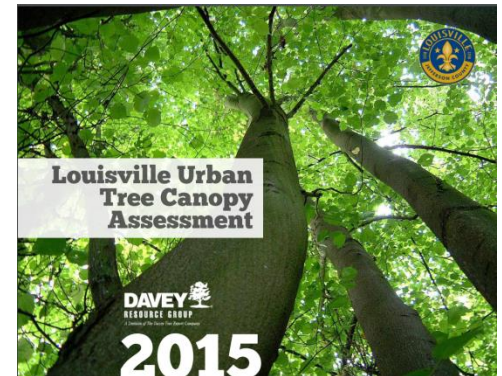
- Interagency Initiatives:

- Environmental Protection Agency (EPA), including Regionally Applied Research Effort (RARE) project
- Kentuckiana Regional Planning & Development Agency (KIPDA)
- KY Division for Air Quality (DAQ)
- Louisville Metro Government partners
  - Office of Sustainability
  - Department of Public Health and Wellness
  - Louisville Resilience



# Policy & Program Development

- Green Infrastructure/Tree Canopy
  - Urban Heat Island reduction
  - Pollution reduction
    - Reduce energy use
    - Cut emissions from gas/diesel lawn equipment
- Vehicle and Equipment Technology
  - Clean engines
  - Clean fuels
  - Idle reduction
- Transportation Planning/Land Development
  - Air Quality Analysis – Plan Review
  - Comprehensive Plan
  - Expanded alternative transportation choices
    - MOVE Louisville
  - Regional Freight Plan

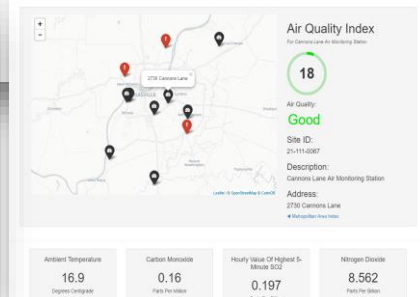


**APCD is constantly seeking opportunities to collaborate with the community.**

# Information Resources

- APCD website/emailing list/Twitter
- Louisville Air Watch
- LouieStat
- Open Records Request

Call APCD at  
(502) 574-6000



# Questions?



# Louisville's Air Quality

Air Pollution Control District  
07/16/2018





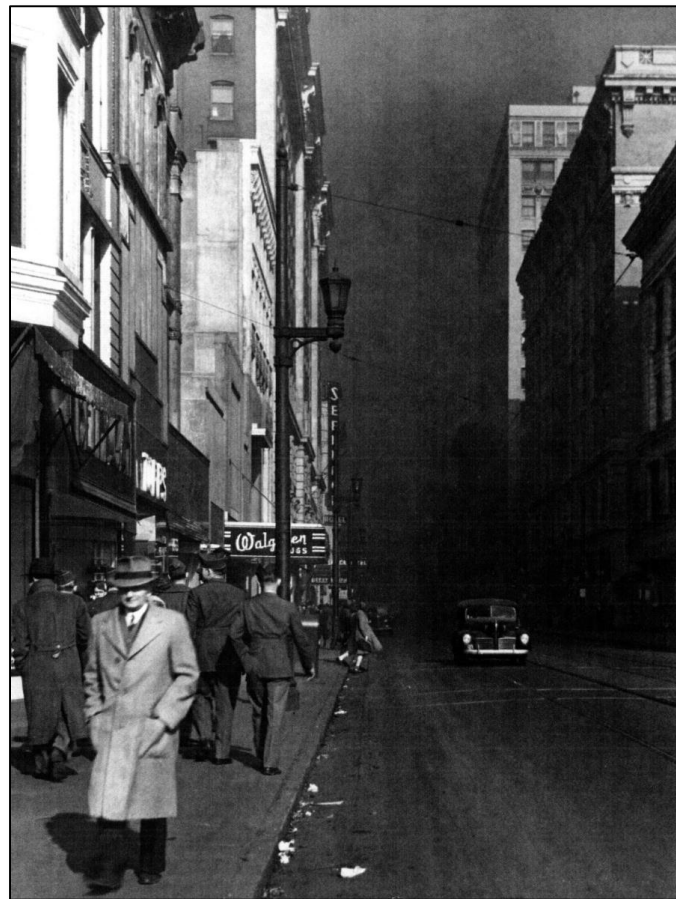
# Air Pollution Control in Louisville

**1945** – Louisville Smoke Commission established

**1952** – Air Pollution Control District of Jefferson County formed

**1970** – Clean Air Act

**2005** – Strategic Toxic Air Reduction program implemented



Fourth Street 1943

# The Clean Air Act of 1970



Louisville Skyline August 1973

- EPA was established to administer environmental laws
- Congress passed the CAA to protect air quality and public health
- The CAA required EPA to:
  - Identify criteria pollutants
  - Set **National Ambient Air Quality Standards (NAAQS)** for the criteria pollutants

# APCD and the Clean Air Act

- The APCD implements the Clean Air Act in Louisville by delegation from the U.S. Environmental Protection Agency (EPA) and subject to a grant of concurrent jurisdiction from the Kentucky Division for Air Quality (DAQ).
- APCD's regulations must be at least as stringent as state and federal laws, but can be more stringent where needed.



# National Ambient Air Quality Standards (NAAQS)

- The Clean Air Act requires EPA to set NAAQS (40 CFR part 50)
- Health-based standards – periodically reviewed and strengthened over time by an independent body of reviewers from the scientific community
- EPA sets NAAQS for **six principal pollutants**, which are called “**criteria**” air pollutants



# Criteria Pollutants

**Carbon Monoxide – Fatigue/Headaches**

**Lead – Neurological Effects**

**Sulfur Dioxide – Wheezing**

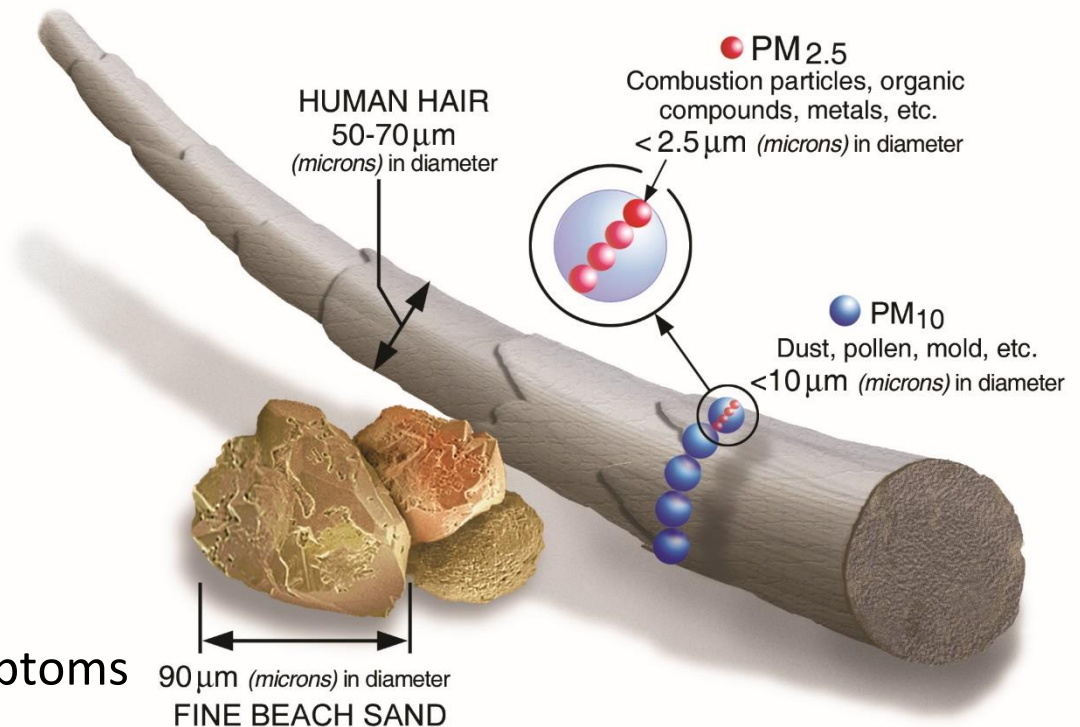
**Nitrogen Dioxide – Irritates Airways**

**Particulate Matter – Aggravates Asthma**

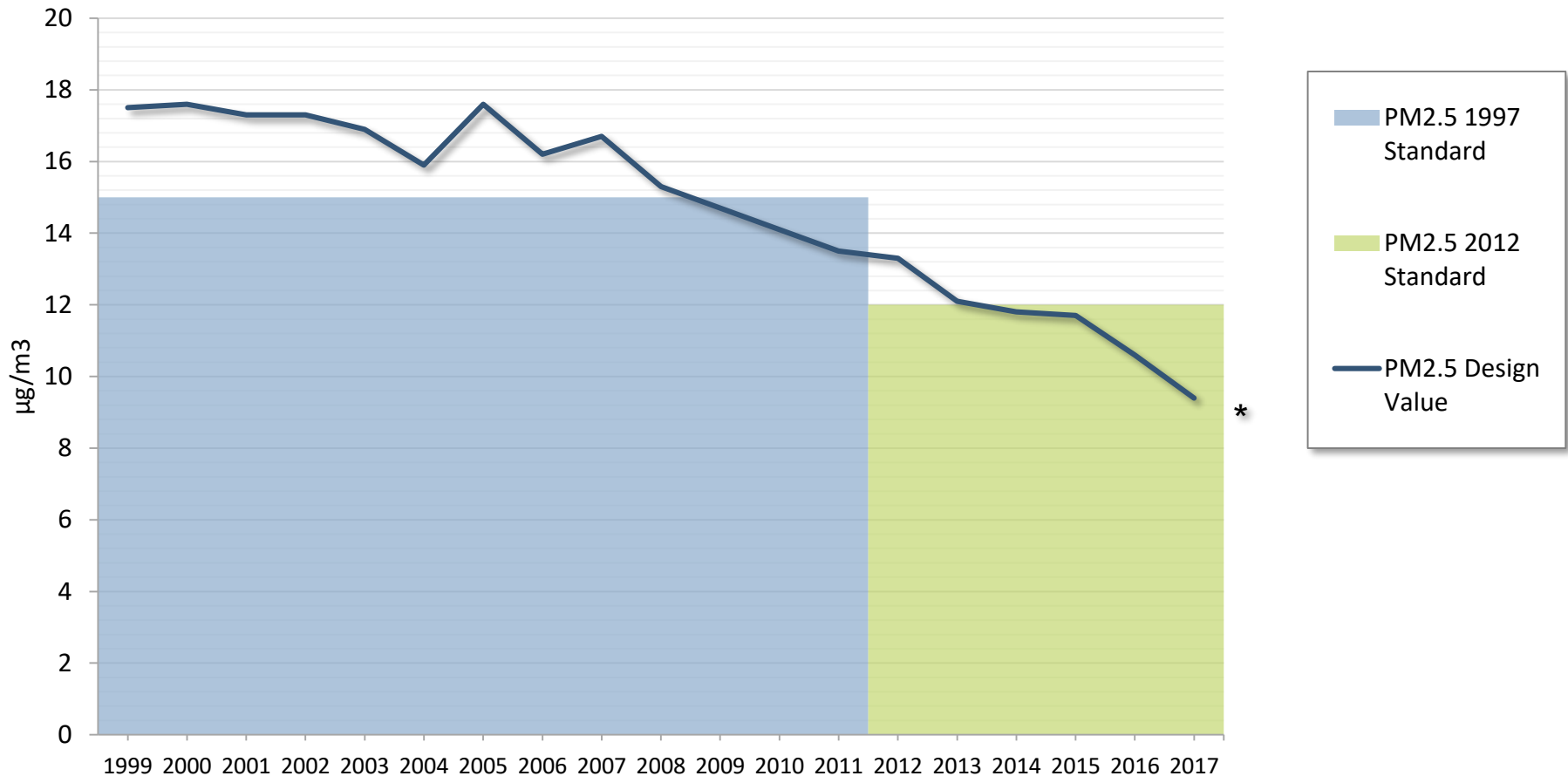
**Ozone – Irritates Respiratory System**

# Particulate Matter

- A complex mixture of particles and liquid droplets found in the air
- AQI Pollutant
- Categories:
  - Coarse Particles ( $PM_{10}$ )
  - Fine Particles ( $PM_{2.5}$ )
- Health effects:
  - Aggravated asthma
  - Decreased lung function
  - Increased respiratory symptoms
  - Irregular heartbeat
  - Heart attacks



# Louisville's Fine Particle History



\*2017 Design Value – 9.4 µg/m<sup>3</sup>



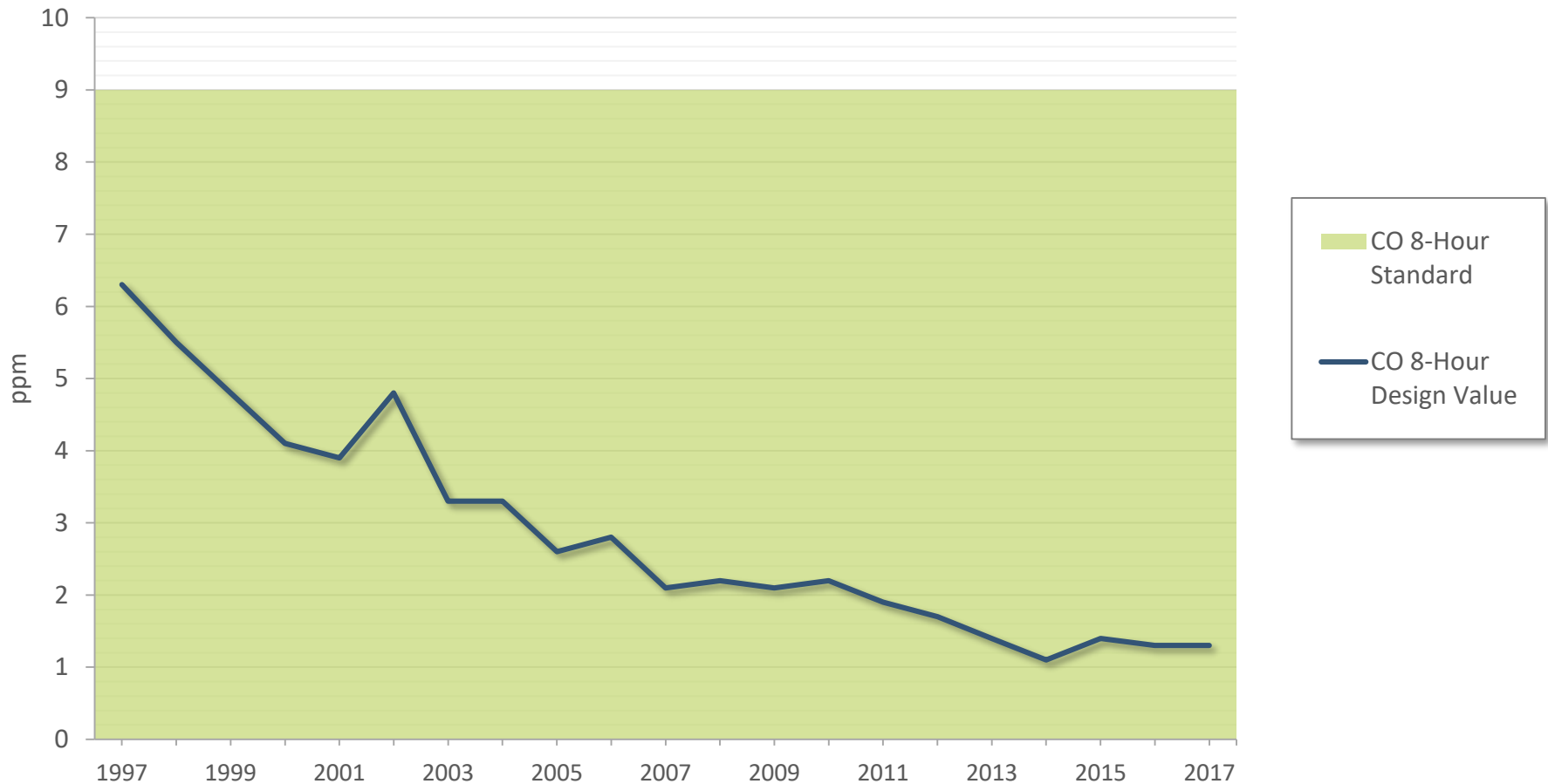
# Carbon Monoxide (CO)

- What is it?
  - A colorless and odorless gas formed when carbon in fuel is not burned completely
- AQI pollutant
- Where does it come from?
  - Gasoline engines
  - Manufacturing facilities
  - Burning wood





# Louisville's CO History

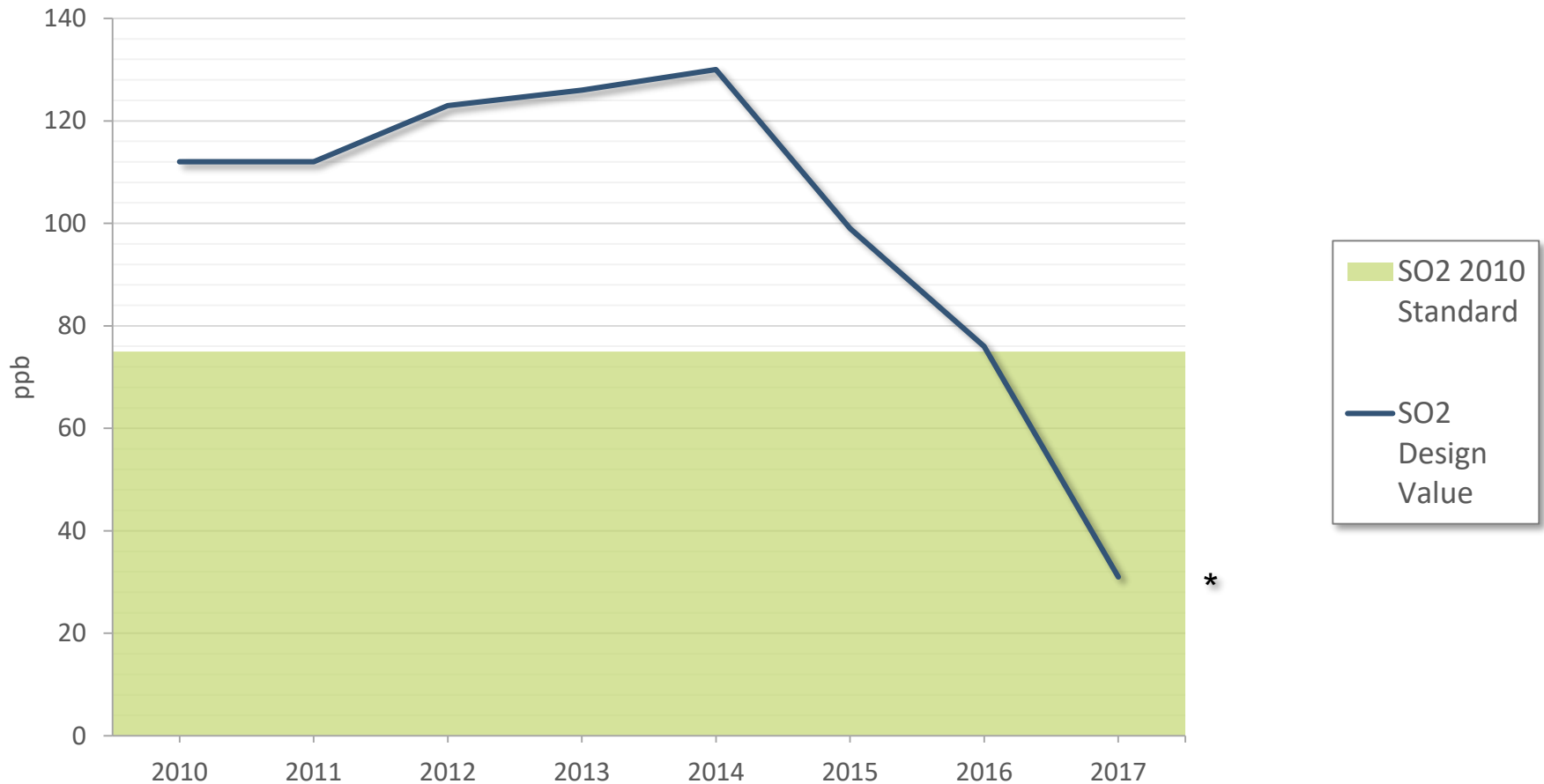


# Sulfur Dioxide (SO<sub>2</sub>)

- What is it?
  - A highly reactive gas
  - Contributes to the formation of fine particle pollution and acid rain
- AQI Pollutant
- Partial County Nonattainment
- Where does it come from?
  - Coal-fired power plants, boilers, furnaces, etc.
- Health effects:
  - Inflammation/irritation of respiratory system, worsen asthma attacks, and worsen existing heart disease in sensitive groups



# Louisville's SO<sub>2</sub> History



\*2017 Design Value – 31ppb

# Ozone

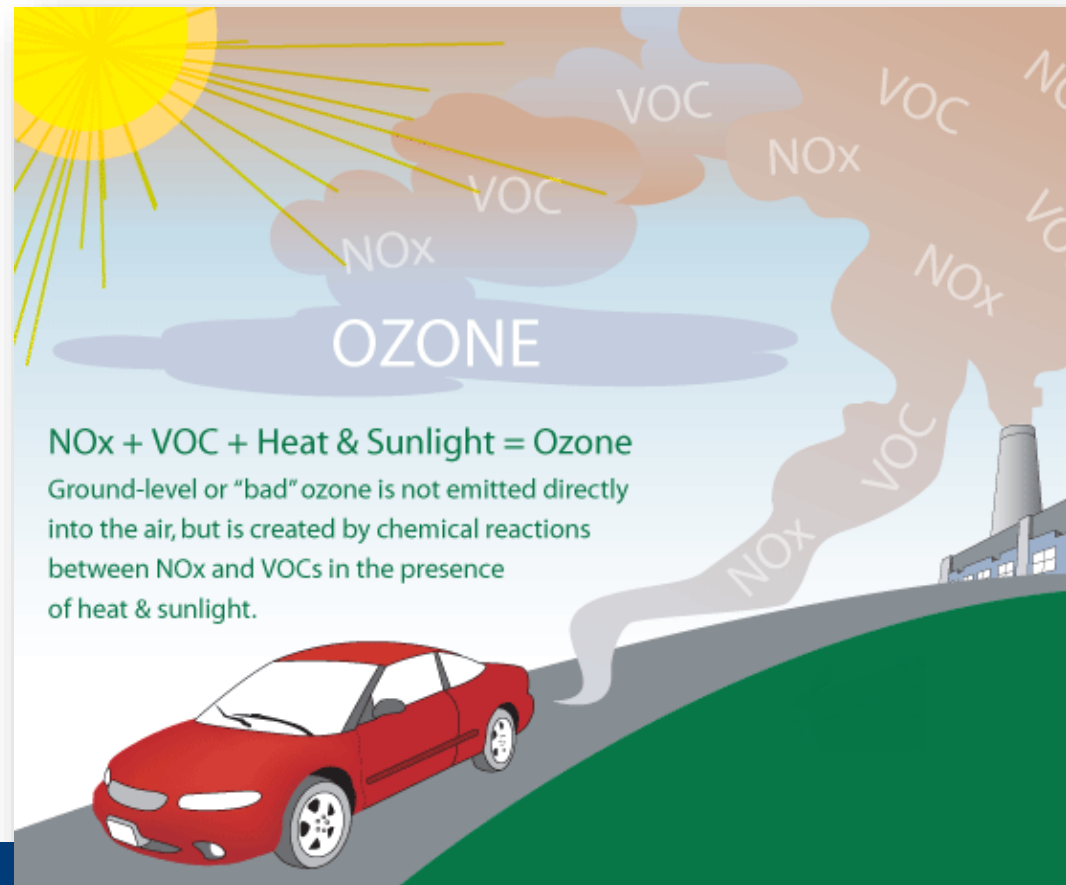
- Created via a chemical reaction:  
 **$\text{NO}_x + \text{VOCs} + \text{Sunlight} = \text{O}_3$**

- Ozone season:  
March-October

- AQI Pollutant

- Health effects:

- Shortness of breath
- Inflammation of airways
- Aggravate lung disease
- Increase frequency of asthma attacks



# Volatile Organic Compounds (VOCs)



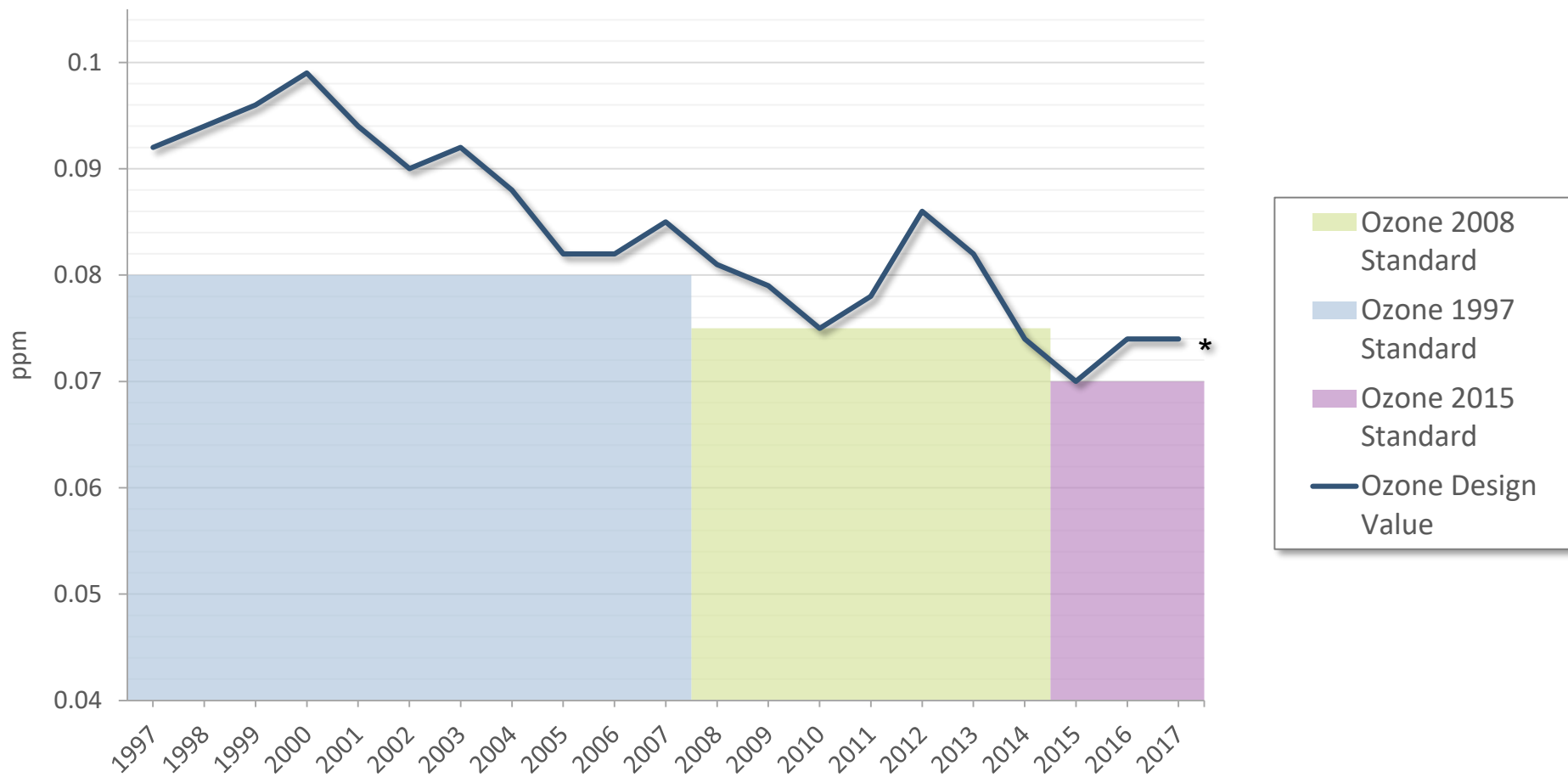
- What are they?
  - Organic compounds that easily become vapors or gases
  - Contributes to formation of ground-level ozone (“ozone precursor”)
- Not a criteria pollutant
- Many VOCs are also air toxics
- Where does it come from?
  - Gasoline engines and fueling
  - Solvents, paints, consumer products

# Nitrogen Oxides (NO<sub>x</sub>)



- What are they?
  - Primarily gets in the air from the burning of fuel
  - Contributes to formation of ground-level ozone (“ozone precursor”)
- NO<sub>2</sub> is a criteria pollutant
- Where does it come from?
  - Forms from emissions from cars, trucks and buses, power plants, and off-road equipment

# Louisville's Ozone History



\*2017 Design Value – 0.074ppm

# Current NAAQS Status

Pollutant	Standard	Averaging Time	Attainment Status
Carbon Monoxide	9 ppm	8-hour	Attainment
	35 ppm	1-hour	Attainment
Lead	0.15 $\mu\text{g}/\text{m}^3$	Rolling 3-month Average	Attainment
Nitrogen Dioxide	53 ppb	Annual Average	Attainment
	100 ppb	1-hour	Attainment
Particulate Matter (PM10)	150 $\mu\text{g}/\text{m}^3$	24-hour	Attainment
Particulate Matter (PM2.5)	12.0 $\mu\text{g}/\text{m}^3$	Annual Average	Unclassifiable <sup>1</sup>
	35 $\mu\text{g}/\text{m}^3$	24-hour	Attainment
Ozone	0.070 ppm	8-hour	Nonattainment <sup>2</sup>
Sulfur Dioxide	75 ppb	1-hour	Partial County Nonattainment

1 – EPA proposed redesignation to attainment May 30, 2018. 83 FR 24714.

2 – Final designation published June 4, 2018, effective Aug. 3, 2018. 83 FR 25776.



# Air Quality Index

- The AQI is calculated for four Criteria Pollutants:
  - Ozone
  - Particle pollution
  - Carbon monoxide
  - Sulfur dioxide
- AQI value of 100 generally corresponds to the NAAQS. **At or below 100 are generally thought of as satisfactory.**



# A Guide to the AQI

Air Quality Index (0 - 500)	Who needs to be concerned?	What should I do?
<b>GOOD</b> AQI 0 - 50	It's a great day to be active outside!	
<b>MODERATE</b> AQI 51 - 100	Some people who may be unusually sensitive to ozone	Unusually sensitive people: <i>Consider</i> reducing prolonged or heavy outdoor exertion. Watch for symptoms such as coughing or shortness of breath. These are signs to take it a little easier. Everyone else: It's a good day to be active outside.
<b>UNHEALTHY FOR SENSITIVE GROUPS</b> AQI 101-150	Sensitive groups include people with lung disease such as asthma, older adults, children and teenagers, and people who are active outdoors.	Sensitive groups: <i>Reduce</i> prolonged or heavy outdoor exertion. Take more breaks, do less intense activities. Watch for symptoms such as coughing or shortness of breath. Schedule outdoor activities in the morning when ozone is lower. People with asthma should follow their asthma action plans and keep quick relief medicine handy.
<b>UNHEALTHY FOR ALL</b> AQI 151 - 200	Everyone	Sensitive groups: <i>Avoid</i> prolonged or heavy outdoor exertion. Schedule outdoor activities in the morning when ozone is lower. Consider moving activities indoors. People with asthma, keep quick-relief medicine handy. Everyone else: <i>Reduce</i> prolonged or heavy outdoor exertion. Take more breaks, do less intense activities. Schedule outdoor activities in the morning when ozone is lower.
<b>VERY UNHEALTHY</b> AQI 201 - 300	Everyone	Sensitive groups: <i>Avoid</i> all physical activity outdoors. Move activities indoors or reschedule to a time when air quality is better. People with asthma, keep quick-relief medicine handy. Everyone else: <i>Avoid</i> prolonged or heavy outdoor exertion. Schedule outdoor activities in the morning when ozone is lower. Consider moving activities indoors.
<b>HAZARDOUS</b> AQI 301 - 500	Everyone	Everyone: <i>Avoid</i> all physical activity outdoors.

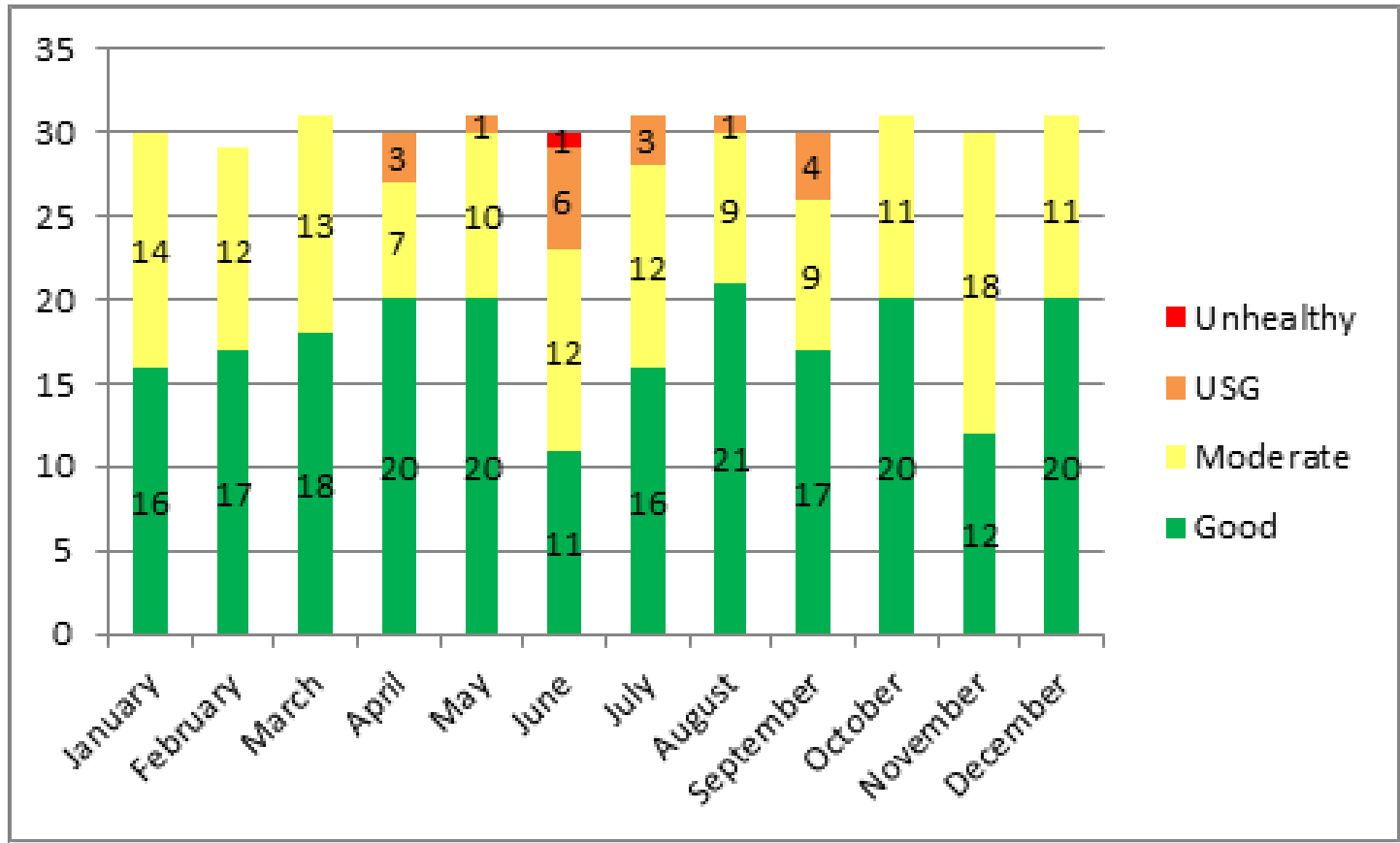
SOURCE: [airnow.gov/index.cfm?action=pubs.aqiguideozone](http://airnow.gov/index.cfm?action=pubs.aqiguideozone) <http://airnow.gov/index.cfm?>

# AQI Breakpoints

Air Quality Index (0 - 500)	Breakpoints (ppb, 8-hour average)
<b>GOOD</b> AQI 0 - 50	0 - 54
<b>MODERATE</b> AQI 51 - 100	55 - 70
<b>UNHEALTHY FOR SENSITIVE GROUPS</b> AQI 101-150	71 - 85
<b>UNHEALTHY FOR ALL</b> AQI 151 - 200	86 - 105
<b>VERY UNHEALTHY</b> AQI 201 - 300	106 - 200
<b>HAZARDOUS</b> AQI 301 - 500	201 to the Significant Harm Level (600 ppb, 2-hour average)
SOURCE: <a href="http://www3.epa.gov/ozonepollution/pdfs/20151001aqifs.pdf">www3.epa.gov/ozonepollution/pdfs/20151001aqifs.pdf</a>	

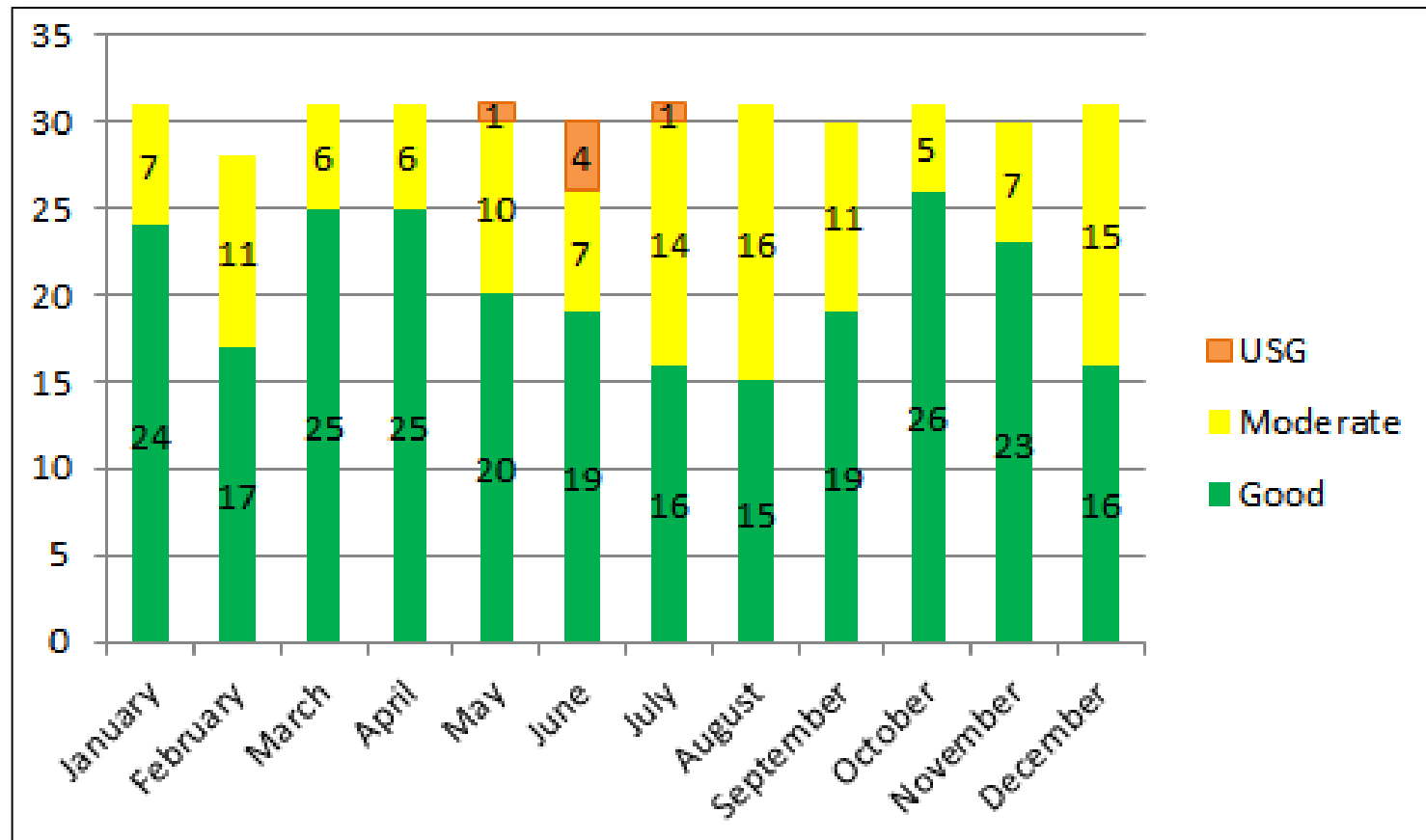
# Daily Air Quality Index

## 2016



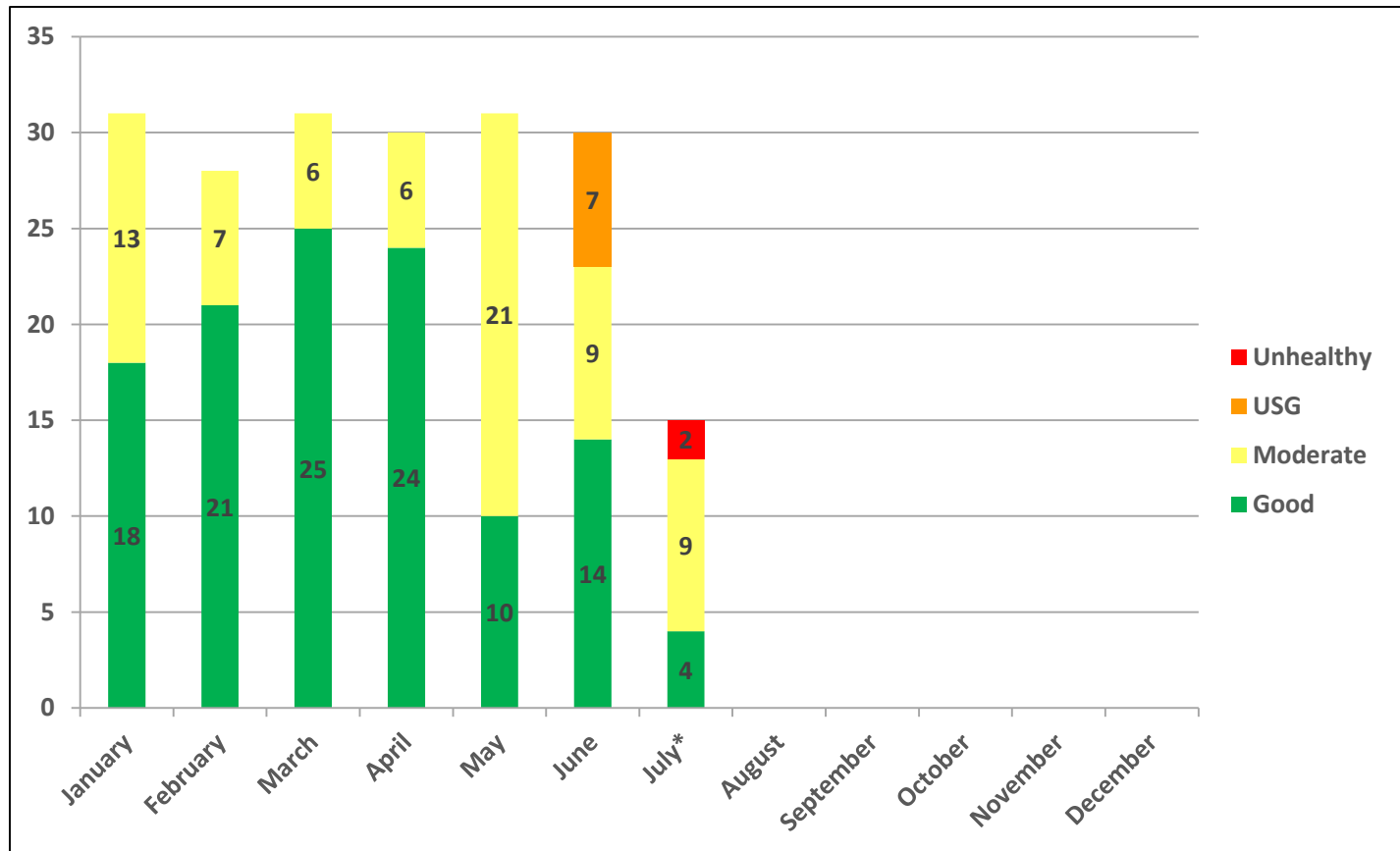
# Daily Air Quality Index

## 2017



# Daily Air Quality Index

## 2018



\* July, so far...

# Air Toxics

Responding to growing concerns about toxic emissions in Western Louisville, in 2005 the APCD developed and implemented the Strategic Toxic Air Reduction (STAR) Program.

Since STAR was enacted, levels of toxic air contaminants have dropped considerably, resulting in a significant reduction in the risk of negative health impacts on residents.



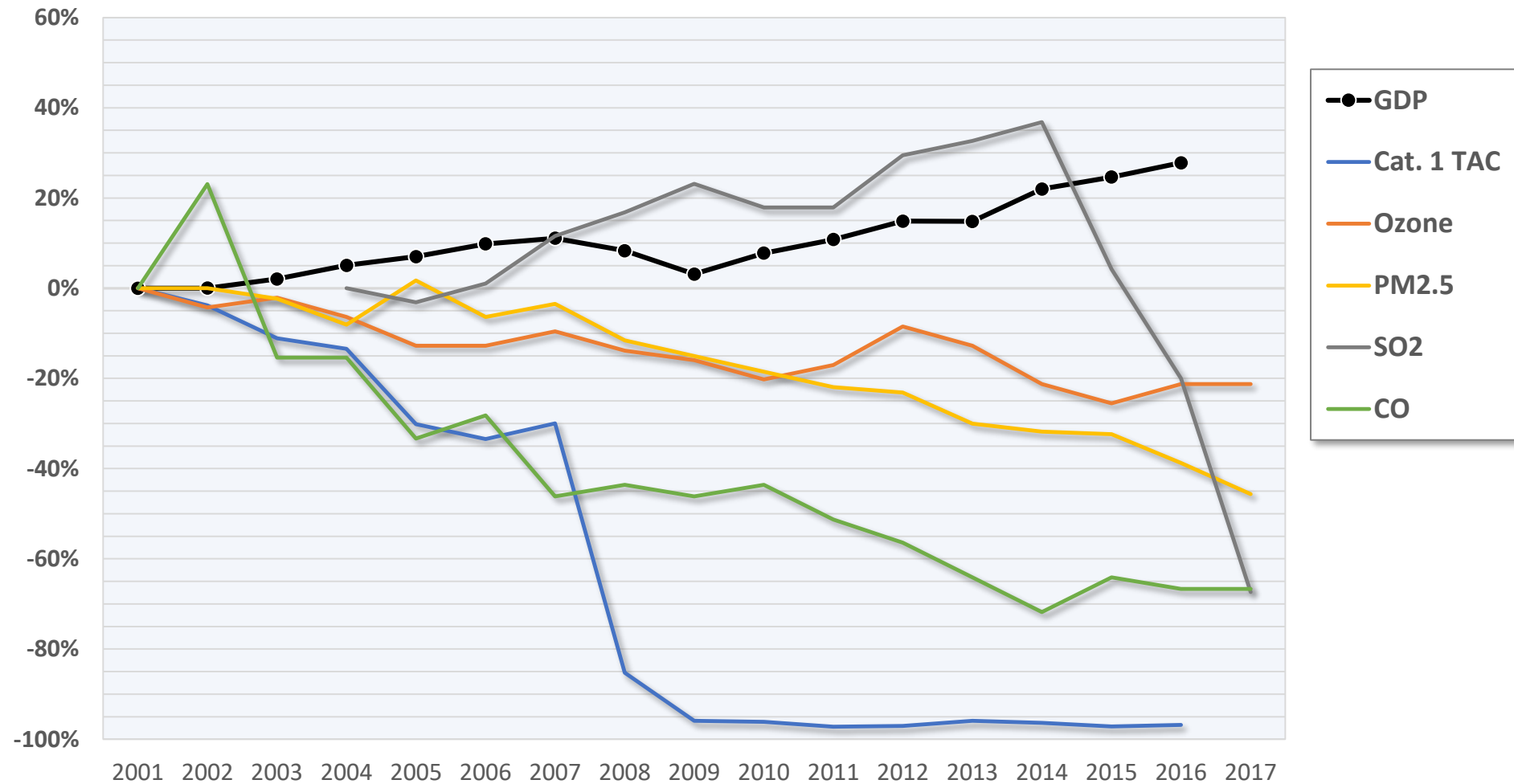
# Total Air Toxics 2004 - 2016

Jefferson County, KY Sources	2004 Air Releases in Pounds	2016 Air Releases in Pounds	% Change
Electric Generating Utilities (NAICS 2211)	4,710,016	792,376	-83% Decrease
All Other Sources	5,141,564	2,407,292	-53% Decrease
Total	9,851,580	3,199,668	-68% Decrease

Source: EPA Toxics Release Inventory



# Louisville, 2001-Present



# Resources

## Air Pollution Control District

[Louisvilleky.gov/APCD](http://Louisvilleky.gov/APCD)

## Air Quality Updates

[Louisvilleky.gov/airquality](http://Louisvilleky.gov/airquality)

[Airnow.gov](http://Airnow.gov)

## Environmental Protection Agency (EPA)

[Epa.gov](http://Epa.gov)

[Epa.gov/Region4](http://Epa.gov/Region4)

## Kentucky Division of Air Quality

[Air.ky.gov](http://Air.ky.gov)

## KAIRE

[Helptheair.org](http://Helptheair.org)

[Facebook.com/helptheair](https://Facebook.com/helptheair)

[Twitter.com/helptheair](https://Twitter.com/helptheair)

## Lawn Care for Cleaner Air

[Louisvilleky.gov/government/lawn-care-cleaner-air](http://Louisvilleky.gov/government/lawn-care-cleaner-air)

## Grow More Mow Less

[Facebook.com/GrowMoreMowLess](https://Facebook.com/GrowMoreMowLess)

# Questions?

## Louisville Metro Air Pollution Control District

701 W. Ormsby Ave.  
Ste. 303  
Louisville, Ky. 40203

(502) 574-6000  
[www.louisvilleky.gov/APCD](http://www.louisvilleky.gov/APCD)

Keith H. Talley Sr., Director